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METHOD AND DEVICE FOR AUTHENTICATING A SUBSCRIBER FOR  
UTILIZING SERVICES IN A WIRELESS LAN (WLAN)

- 5 The invention relates to a method and device for authenticating a subscriber for utilizing services in a wireless LAN (WLAN) while using an IP multimedia subsystem (IMS) of a mobile radio network.
- 10 Methods for authenticating WLAN subscribers in a mobile radio network are known from the journal "Funkschau", issue 09/2002, pages 14-15, namely authentication via a NAI (Network Access Identifier) and optionally via a SIM card, and authentication using the IPv6 (Internet
- 15 Protocol Version 6) and a so-called SIM-6 mechanism. In general, authentication of a wireless LAN subscriber is effected via an HTTP protocol.

The object of this invention is to efficiently

20 authenticate a subscriber of a wireless LAN who is also a mobile radio network subscriber, while utilizing services in a mobile radio network.

The object is achieved according to the invention by the

25 objects of the independent claims with reference to the method and device. Developments of the invention are specified in the subclaims. Authentication while using an IP multimedia subsystem, according to the invention, has the advantage that a subscriber is authenticated for any

30 services that can be reached via the wireless LAN, without the installation of a separate server for

Claims

1. Method for authenticating a subscriber MT (6) for  
utilizing services in a wireless LAN (WLAN) (10) while  
5 using an IP multimedia subsystem (IMS) (3),

characterized in that

a subscriber MT (6) who is to be authenticated and who is  
10 located at a location having WLAN coverage, receives an  
IP address from the WLAN (10) in an attributed manner,  
after which the subscriber authenticates himself to the  
IP multimedia subsystem (3) while giving this IP address,  
whereby an element (WAGW(2)) of the WLAN (10) is informed  
15 of the result of the authentication of the subscriber MT  
(6) with regard to the IMS (3).

2. Method according to Claim 1,

20 characterized in that

a subscriber MT (6) of a wireless LAN (WLAN) is  
authenticated while using an IP multimedia subsystem  
(IMS) (3) of a mobile radio network.

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3. Method according to one of the above claims,

characterized in that

a subscriber MT (6) of a wireless LAN (WLAN) (10) in an IP multimedia subsystem (3) is authenticated while using an offline home subscriber system (HSS) (5).

5 4. Method according to one of the above claims,

characterized in that

a subscriber MT (6) in a wireless LAN (WLAN) (10) in an  
10 IP multimedia subsystem (3) is authenticated while using an authentication server (AAA server).

5. Method according to one of the above claims,

15 characterized in that

the key (Ki) used by the subscriber MT (6) to authenticate himself in the mobile communication network is also used for authentication in the wireless LAN  
20 (WLAN) (10).

6. Method according to one of the above claims,

characterized in that

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the subscriber MT (6) transmits, via the wireless LAN (10), an SIP register message to a device (CSCF) (4) of the IMS (3), which transmits a request for authentication of this IP multimedia subsystem (IMS) subscriber, using  
30 the mechanisms provided for an IP multimedia subsystem

(IMS) authentication, to the home subscriber system (HSS) (5), after which the home subscriber system (HSS) (5) authenticates the subscriber MT (6) using these mechanisms and communicates the result of the authentication to the wireless LAN access gateway (WAGW) (2).

7. Method according to one of the above claims, characterized in that an association is implemented between the subscriber terminal MT (6) and the wireless LAN (WLAN) (10) for the purpose of transmitting and receiving via the radio interface between subscriber MT (6) and wireless LAN (WLAN) (10).

8. Method according to one of the above claims, characterized in that the subscriber terminal MT (6) receives an IP address from the address area of the wireless LAN (10), with which - together with all other IP transport-based data - it can transmit and receive SIP messages that transport authentication messages from and to the IP multimedia subsystem (IMS) (3).

9. Method according to one of the above claims,

characterized in that

the access to services is controlled via a wireless LAN  
access gateway (WAGW) (2), which monitors successful  
5 authentication in the IP multimedia subsystem (IMS) (3).

10. Method according to one of the above claims,

characterized in that

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the wireless LAN (WLAN) (10) is connected to the IP  
multimedia subsystem (IMS) (3) via a Gi interface.

11. Method according to one of the above claims,

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characterized in that

the wireless LAN (WLAN) (10) is connected to the IP  
multimedia subsystem (IMS) (3) via an Mm interface,

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12. Method according to one of the above claims,

characterized in that

25 the result of the authentication is fed to the wireless  
LAN access gateway (WAGW) (2) by a P-CSCF(1) (proxy-call  
state control function)/policy control function) at a  
location having WLAN coverage (hotspot).

30 13. Method according to Claim 9,

characterized in that

the wireless LAN (WLAN) (10) has a proxy-call state  
5 control function node (P-CSCF) (1) which forwards the SIP  
messages to the corresponding entity in the IP multimedia  
subsystem (SIP request) and controls the WLAN access  
gateway (WAGW) (2) with regard to the authentication  
result (SIP response) of the IP multimedia subsystem  
10 (IMS) (3).

14. Method according to Claim 9,

characterized in that

15 instructions are provided to the WLAN access gateway  
(WAGW) (2) on the basis of the result of the  
authentication in the IP multimedia subsystem (3), as to  
how the data traffic of a subscriber MT (6) is to be  
20 handled by the WLAN access gateway (WAGW) (2), in  
particular instructions regarding the blocking of data  
traffic.

15. Method according to one of the above claims,

25 characterized in that

the proxy-call state control function (P-CSCF) (1), by  
means of a policy control function, controls the data  
30 traffic through the WLAN access gateway (WAGW) (2) and

grants, restricts, increases or declines the quantity and/or quality of the data flow of a subscriber MT (6) through the WLAN access gateway (WAGW) (2).

5 16. Method according to one of the above claims

characterized in that

the policy control function is part of the proxy-call  
10 state control function node (P-CSCF) (1) or is a separate unit.

17. Method according to one of the above claims,

15 characterized in that

the result of the authentication is fed to the wireless LAN access gateway (WAGW) (2) by the CSCF (call state control function) (4) /policy control function in the IP  
20 multimedia subsystem (IMS) (3).

18. Method according to Claim 14,

characterized in that

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the call state control function node (CSCF) (4) of the IP multimedia subsystem (3) controls the WLAN access gateway (WAGW) (2) with regard to the authentication result of the IP multimedia subsystem (3).

30

19. Method according to Claim 15,

characterized in that

5 the proxy-call state control function (P-CSCF) (1), by  
means of a policy control function, controls the data  
traffic through the WLAN access gateway (WAGW) (2), and  
grants, restricts, increases or declines the quantity  
and/or quality of the data flow of a subscriber MT (6)  
10 through the WLAN access gateway (WAGW) (2).

20. Method according to Claim 15,

characterized in that

15

a Go interface is installed between the call state  
control  
function node (CSCF) (4) of the IP multimedia subsystem  
(3) and the WLAN access gateway (WAGW) (2), for protected  
20 data transfer.

21. Method according to one of the above claims,

characterized in that

25

the authentication result is evaluated by expanded  
functionalities in the wireless LAN access gateway (WAGW)  
(2).

30 22. Method according to Claim 18,

characterized in that

the authentication result received from the IP multimedia  
5 subsystem (IMS) (3) is converted by the WLAN access  
gateway (2), whereby said WLAN access gateway (2) allows  
subscriber data to pass through completely or with  
restrictions.

10 23. Method according to Claim 19,

characterized in that

the evaluation of the authentication result (SIP  
15 messages) is implemented using an "application layer  
gateway".

24. Method according to one of the above claims,

20 characterized in that

the subscriber MT (6) of the wireless LAN (WLAN) (10) is  
also a subscriber of the mobile communication network.

25 25. Method according to one of the above claims,

characterized in that

the wireless LAN network (WLAN) is integrated into mobile communication networks with the help of ETSI HiperLan and IEEE 802.11.

5

26. Device for authenticating a subscriber MT (6) for utilizing services in a wireless LAN (WLAN) (10) with the help of an IP multimedia subsystem (IMS) (3),

10 characterized in that

a device constituting the proxy call state control function node (1) by means of the policy control function [a by an IP multimedia subsystem that (sic)] is  
15 configured such that an authentication result that is received is evaluated and the quantity and/or quality of the data flow through the WLAN access gateway (2) of a subscriber MT (6) is thus granted, restricted, increased or declined.

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27. Device according to Claim 23,

characterized in that

25 the device constituting the proxy call state control function node (1) is a node in the WLAN (10).

28. Device according to one of the above claims,

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characterized in that

the device constituting the proxy call state control  
function

- 5 node (1) of the IP multimedia subsystem (3) is provided  
for controlling authentication in the WLAN (10).

29. Device according to one of the above claims,

- 10 characterized in that

- the WLAN access gateway (2) has a device that is  
configured such that said device converts the  
authentication result which is received from the IP  
15 multimedia subsystem (3), by allowing subscriber data to  
pass through completely or with restrictions.